Site 280 Newman Road Salt Marsh

Overview: The Newman Road Salt Marsh potential restoration site is located to the north of Newman Road approximately 0.75 miles west of Route 1A in Newbury. The site encompasses approximately 33 acres of primarily salt marsh upstream of an existing culvert crossing under Newman Road. Newman Road is an early town road and shown on the 1894 USGS Newburyport-Exeter, NH-MA Quadrangle map. The creek within the potential restoration site is an unnamed tributary to the Little River which joins the Parker River approximately 0.25 miles west of the Route 1A bridge crossing. The site also receives surface flow over the low-lying Trustees of Reservations (TTOR) access trail from the adjacent Little River Marsh to the west. This crossing was recently improved with the construction of several broad, hardened swales to increase surface flow across the trail. Newman Road is also relatively low-lying and is routinely overtopped during storm events. Despite these additional conveyances, the road crossing restricts tidal exchange during most tides. Tide gauge data collected in early May of 2005 documented a maximum restriction of approximately 0.9 feet. Other evidence of a tidal restriction includes: distinct scour pools both up and downstream of the crossing, bank erosion, impounded conditions upstream of the crossing, observed minor subsidence of the high marsh plain (approximately 0.25 feet) and limited populations of *Phragmites.* There is also a pronounced decrease in the typical dimensions of the creek upstream of Newman Road. The approximate width of the channel is 18 ft and 35 ft upstream and downstream, respectively.

The majority of the restoration area (73%) is held in conservation by TTOR as part of the Old Town Hill Reservation. The remaining area is privately held. The Newman Road right-of-way is municipally owned.

Structure conditions: Newman Road has been recently resurfaced and is in good condition, despite the fact that it is overtopped during storm events and unusually high spring tides. The roadway is typically 21 feet wide with gravel shoulders and steel single beam guardrail over the culvert. The culvert under Newman Road consists of a 48 inch CMP plate culvert approximately 30 feet in length. The pipe is generally in good condition. However, the cut stone headwall structure is in poor condition (primarily upstream) from erosion. The invert of the pipe is set approximately 2.4 feet above the downstream creek bottom elevation which causes substantial impoundment within the creek during ebb conditions. There is approximately 1.8 feet of cover over the pipe.

Ecological Integrity: The potential restoration site generally has a high level of ecological integrity. The majority of the marsh and supporting land is held in conservation by TTOR as part of the Old Town Hill Reservation. The area is contained within the Parker River/Essex Bay ACEC and BioMap Core Habitat. The surrounding forest lands are mapped as Supporting Natural Landscape. Land uses are undeveloped forest lands and agricultural fields. The upper reaches of the wetland system include a freshwater marsh/wet meadow, shrub swamp and forested wetland. This area contains a modest stand of *Phragmites* which will likely expand without control measures. Other stands of *Phragmites* within the potential restoration site are limited to small fringing populations. The marsh also has a relatively high density of narrow lateral ditches which are likely related to past management practices to support haying operations. Many of these small ditches (especially to the east of the main creek) are overgrown with *S. alterniflora.* Much of the marsh in this location is dominated by short-form *S. alterniflora* with saturated peat conditions. The density of past ditching efforts also appears to have severely limited the number and size of existing salt pannes.

The elevated invert above the creek bed restricts upstream fish passage over the lower portion of the flood tide. The Little River downstream of the potential restoration site is mapped as suitable habitat for American oyster. The Parker River includes substantial soft shell clam beds.

Tide gauges deployed in early May of 2005 documented a restriction of tidal flow through the culvert under Newman Road which increases as tidal prism increases. The highest recorded tide downstream of the culvert occurred on May 8 at 1:14 AM. Upstream high tide occurred at 2:00 AM with a resulting tidal dampening was 0.54 ft and a delay of 46 minutes. The dampening amounted to approximately 6.7% of the total tidal prism recorded at the downstream gauge. The period of the highest recorded tide coincided with a significant storm event and precipitation in excess of one inch which likely impounded additional freshwater on the marsh and influenced the peak elevation recorded upstream of the culvert. The greatest measured tidal dampening of 0.86 ft occurred on May 10th. The dampening amounted to approximately 11.4% of the total tidal prism recorded at the downstream gauge. Relatively low salinities of 2.3 and 2.2 ppt (downstream and upstream, respectively) were recorded on a near slack, ebbing tide. These values are indicative of significant freshwater contributions to the marsh system, especially during spring conditions.

The overall severity of the existing impairments is considered moderate. A reduction in the tidal restriction with the replacement of the existing culvert with a larger structure set lower in the channel would reduce the observed bank erosion and impounded channel conditions. Over time, increased tidal exchange would limit the expansion of the small fringing populations of *Phragmites* along with and other brackish marsh vegetation and allow the marsh plain to increase in elevation in response to rises in sea level. Limited conversion of other wetland communities including freshwater marsh/wet meadow and shrub swamp to salt marsh or brackish marsh are anticipated. Relatively small areas of forested wetland associated with the wetland system are likely to remain unaffected. No impacts to abutting developed lands are anticipated.

Socioeconomic: Recreational values of the potential restoration site are enhanced by the excellent public access and wildlife viewing opportunities provided by the trail system and board walk which crosses the marsh, as well as available nearby parking off Newman Road. The conservation status of most of the site and good access enhance educational opportunities. However, there is no known ongoing research or nearby schools. The potential restoration site's Uniqueness/Heritage value is enhanced by its inclusion within the Parker River/Essex Bay ACEC. The site does not include any known cultural resource elements or urban setting values.

Construction Logistics/Feasibility: The restoration potential for this site is enhanced by several factors including: undersized culvert, degraded headwall condition, low traffic volumes, detour potential via Hay Street, suitable construction access and staging areas (road closure and TTOR parking area), no low lying abutters, and the lack of above or below ground utilities. There are no major factors present which would escalate costs over a typical culvert replacement project. However, based on downstream creek dimensions, a relatively large box culvert (approximately 6 by 10 feet) is likely necessary to alleviate the modest restriction. Total construction costs are estimated to be in the range of $350,000. The restoration opportunity also has a high level of local support. It was recently nominated (FY06) by the Town of Newbury to be designated as a priority project in order to receive restoration assistance from the WRP. TTOR is identified as a project partner. In 2004, The Trustees, in partnership with the WRP, Gulf of Maine Council, and Beals and Thomas Inc., completed a partial restoration of the area by installing hardened swales along the TTOR access trail. The site was included in the 1996 Tidal Crossings Inventory and Assessment prepared by the Parker River Clean Water Association for Eight Towns & the Bay.

Restoration Potential: The potential restoration site is considered to have high restoration potential based on the presence of several important socioeconomic factors including the high recreational value, conservation status, and the extent of the existing tidal restriction. Although the potential restoration site currently has a high level of ecological integrity and is included within the Parker River/Essex Bay ACEC, many of the observed impairments will likely worsen without restorative actions. In addition there are relatively few construction implementation drawbacks (e.g., no low lying abutters or utilities). With supportive abutting land owners and local (municipal) interest in the project, the next key step toward implementation involves securing funds for refined study of design alternatives and construction.

Site # 280 | Site Features | Scale: 1:2,000

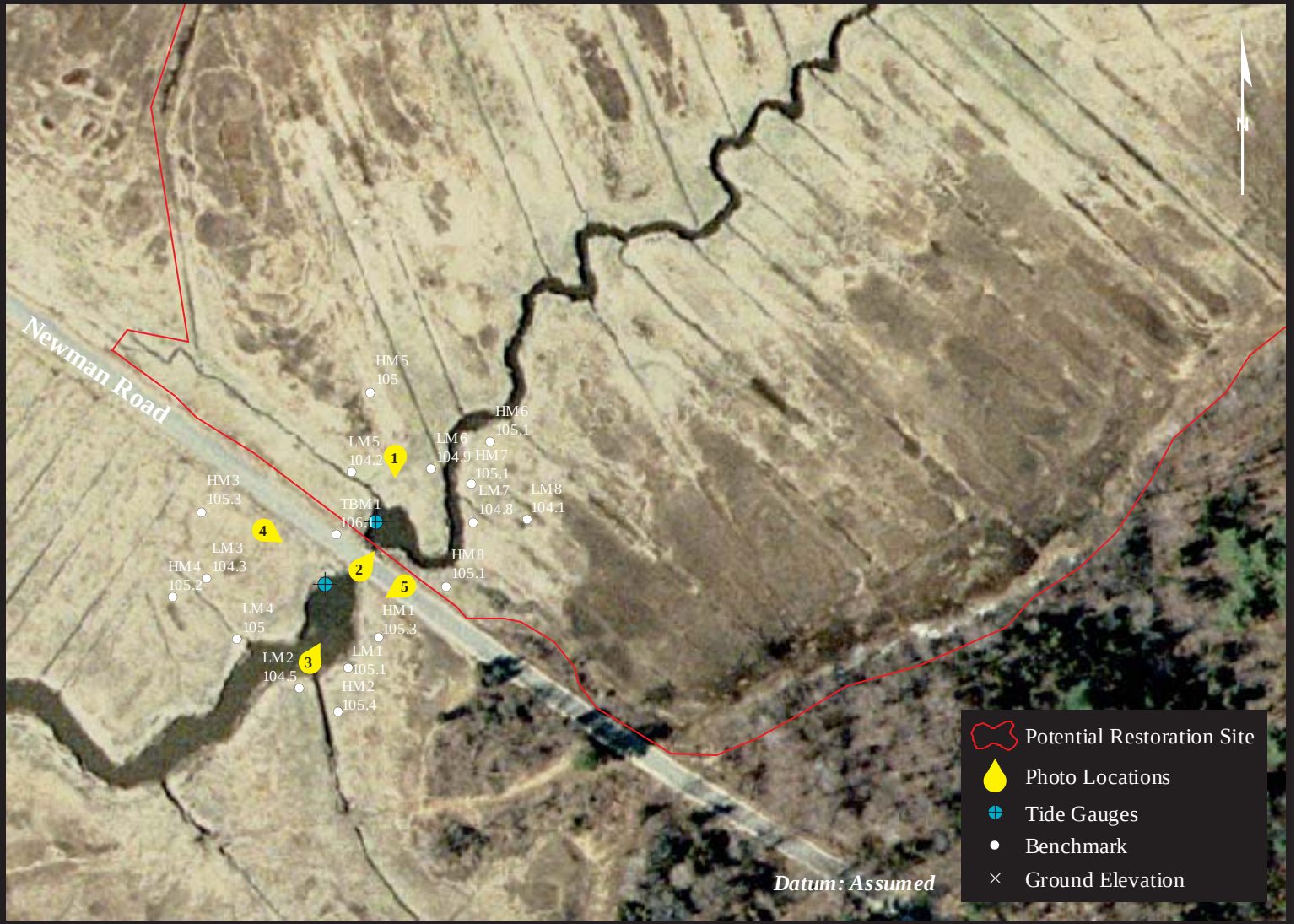


Photo 1 - View of Upstream Crossing

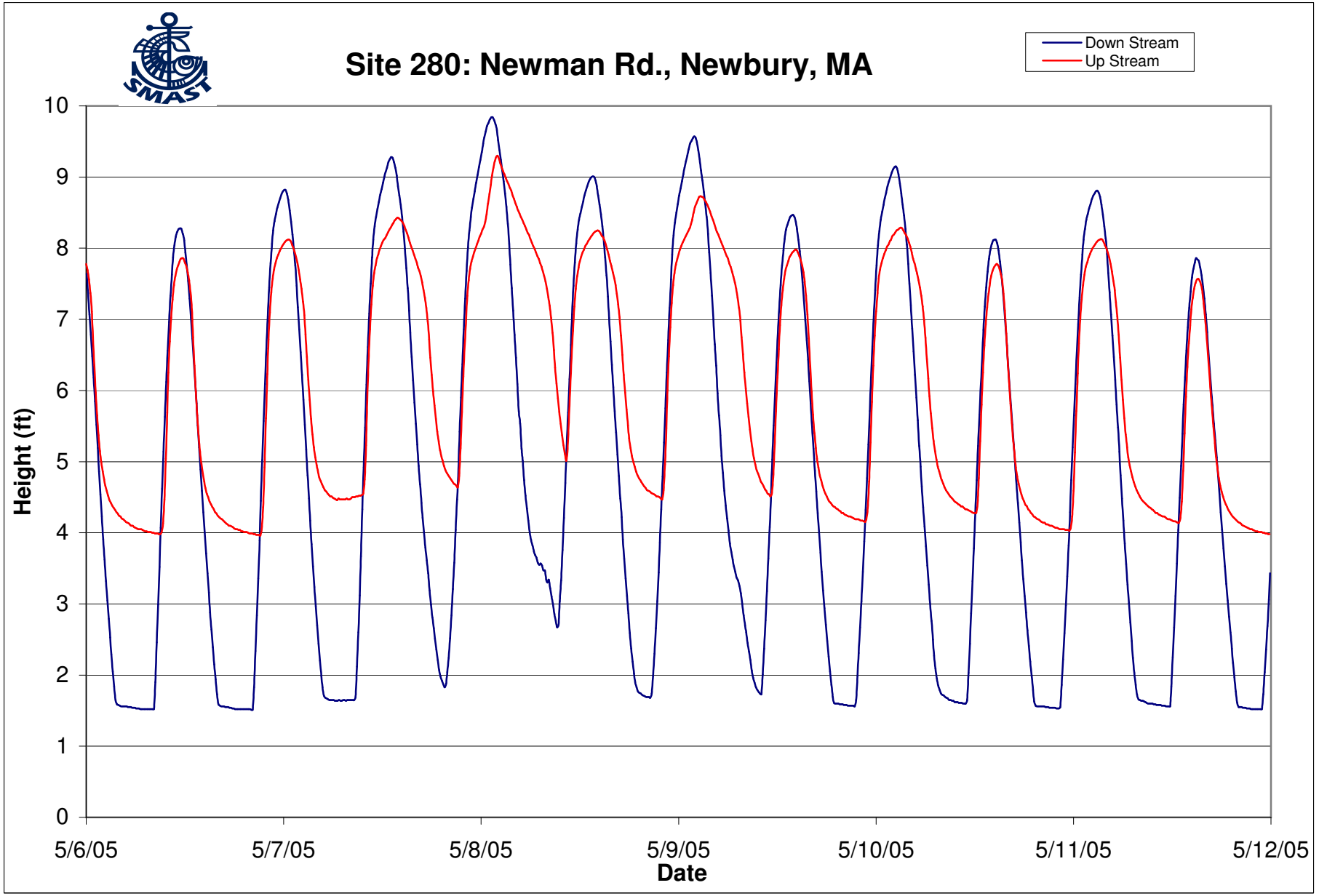
Photo 2 - Upstream Marsh and Scour Pool

Photo 3 - View of Downstream Crossing

Photo 4 - View of Newman Road at Crossing

Photo 5 - Downstream Marsh and Scour Pool

Photo 6 - Trustees Access Path with Hardened Swales


Site 280: Newman Rd., Newbury, MA
Down Stream
Up Stream
Height (ft)
10
9
8
7
6
5
4
3
2
1
0
5/6/05
5/7/05
5/8/05
5/9/05
5/10/05
5/11/05
5/12/05
Date

Great Marsh Coastal Wetlands Restoration Planning
Rapid Field Assessment

Site # 280
Newman Road Salt Marsh

Site Information

Site ID:	280
Site Name:	Newman Road Salt Marsh
Municipality	Newbury
Location:	Newman Road, 0.75 miles west of Route 1A.
Adjacent Waterbody:	Little River

Affected Area (Acres)

Mudflat/Open Water:	0	Total Area:	32.2
Salt Marsh:	29.2		
Other Wetland:	3	*Other Description:*	
Other:	0		

Impairment(s)

Tidal Restriction	☑	Fill	☐
Obstructed Ditche(s)	☑	Invasive Species	☑
Impoundment	☑	Pollution / Siltation	☐

Severity of Impairments: Moderate

Project Type

Roadway Culvert(s)	☑	Obstructed Ditches	☑
Bridge	☐	Fill	☐
Berm	☐	Other	

Evidence of Restriction

Gauge Data	☑	Impounded Flow	☑
Downstream Scour Pool	☑	Obstructed Flow	☐
Upstream Scour Pool	☑	Invasive Species	☑
Bank Erosion	☑	Ponded Conditions	☐
Slumping	☐	Subsidence	☑

Structure / Channel:

Overall Condition:	Fair
Life Expectancy (Years):	15
Road Condition:	Good
Structure Type:	CMP Pipe
Structure Age (Years)	40
Structure 1 Width (Feet):	4
Structure 1 Length (Feet):	30
Structure 2 Width (Feet):	
Structure 2 Length (Feet):	
Skew (Degrees):	0
Cover (Feet):	1.8
Scour Protectection:	☑
Adequately Aligned:	☑
Headwall Type:	Cut Stone
Headwalll Condition:	Poor

Ecological Integrity / Habitat Value

Surrounding Land Use %

Commercial / Industrial	0
Residential	0
Agricultural	30
Undeveloped	70

Severity of Impairment(s)	Moderate
Invasive Plant Cover:	Low
Extent of Wooded Buffer:	Good
Habitat Connectivity:	Good
NHESP Estimated Habitats of Rare Wildlife:	☐
NHESP Priority Habitats of Rare Species:	☐
NHESP BioMap Core Habitat:	☑
NHESP BioMap Supporting Natural Landscape:	☑
ACEC:	☑
Anadromous Fish:	☐
Shellfishing Suitability:	☑
Barriers to Fish Passage	Minimal

Great Marsh Coastal Wetlands Restoration Planning
Rapid Field Assessment

Site # 280
Newman Road Salt Marsh

Construction Logistics / Feasibility

Traffic Volume	Low
Detour Potential	☑
Site Access	Fair
Staging Areas	☑
Fill Material Concern	None
Low Lying Property Concerns	None
Overhead Utility Constraint	None

Underground Utilities

Water	☐	*Telephone*	☐
Gas	☐	*Sewer*	☐
Electric	☐	*Drainage*	☐

Permitting Complexity	Low
Local Support	Yes
Feasibility Cost	20,000
Design Cost	40,000
Permitting Cost	25,000
Construction Cost	350,000
Total Cost	435,000
Relative Cost/Acre	14,000

Socioeconomic

Recreation

Public Access:	☑
Watercraft / Portage:	☐
Wildlife Viewing:	☑

Education

Schools Nearby:	☐
Ongoing Research:	☐
Education / Outreach Potential:	Medium
Saftey Concerns (Access):	Low

Uniqueness / Heritage Value

Rare Species Habitat:	☑
ACEC:	☑
Cultural Resource Features	☐
Urban Viewscape Value:	None
Urban Habitat Value:	None

Tide Surveys

	Start:		*Finish:*
Dates of 1st Survey:	5/3/2005	-	5/14/2005
Date of Highest Tide:	5/10/2005		
Max Measured Tidal Dampening:	0.86		
Percent of Tidal Prism:	11		
Measured Delay:	46 min		

	Start:		*Finish:*
Dates of 2nd Survey:		-	
Date of Highest Tide:			
Max Measured Tidal Dampening:			
Percent of Tidal Prism:			
Measured Delay:			

Summary

Uniqueness / Heritage Value:	Medium	Ecological Integrity:	High
Recreational Value:	Medium	Logistics / Feasibility:	High
Educational Value:	Medium		
		Restoration Potential:	High